Scanning Tunneling Spectroscopic Studies of the Pairing Potential and Pairing Symmetry of Highly Dense MgB_2 N.-C. YEH, C.-T. CHEN, P. SENEOR, *Dept. of Physics, California Institute of Technology, Pasadena, CA;* R. P. VASQUEZ, *Jet Propulsion Laboratory, Pasadena, CA;* C. U. JUNG, Min-Seok PARK, Heon-Jung KIM, Sung-Ik LEE, *Pohang Univ. of Science and Technology, Pohang, Korea* -- Spatially resolved quasiparticle tunneling spectra on highly dense MgB_2 pellets with T_c = 39 K are taken using a low-temperature STM. The spectra on the as-grown samples reveal long-range spatial homogeneity (> 400 nm) within each grain, and macroscopic scale variations at length scales beyond a few μm's. The (dI/dV)-vs.-V spectra are insensitive to the tunneling impedance, and are consistent with a pairing potential Δ ranging from 4.0 to 6.5 meV at 4.2 K. The universally pronounced V-shape spectra with vanishing density of states near the Fermi level do not agree well with BCS s-wave pairing, even if the effect of disorder is taken into account. Further BTK analysis based on the scenarios of anisotropic s-wave pairing and other pairing symmetries are considered and compared with the data. Tunneling spectra on etched MgB_2 samples that are free of surface carbonates and oxides according to the XPS studies are also taken and compared with those of as-grown MgB_2.